

Lake “O” Rebounds

Plants, fish and wildlife thriving



The American Lotus (above) and the speckled perch (top right) are among Lake Okeechobee's natural attractions.

Lake Okeechobee, which once stretched unbounded from the Kissimmee River to the sawgrass plains of the Everglades, was described by early explorers as an inland sea. It is the largest lake in Florida and second largest in the continental United States, in spite of its confinement within the earthen walls of the Herbert Hoover Dike. The lake is a vital component of South Florida's Kissimmee-Okeechobee-Everglades ecosystem, and the main surface water storage location in the Central and Southern Florida Flood Control Project. It provides recreation, flood protection, drinking water, and a host of other values to residents as well as visitors.

The lake is home to one of the nation's prized bass and speckled perch fisheries, as well as an economically important commercial fishery. At the same time, it provides habitat for a wide variety of wading birds, migratory waterfowl, and the federally endangered Snail Kite. Lake Okeechobee is a source of drinking water for rural cities and towns around the lake, and can be a backup water supply for the urban communities of the lower east coast of Florida. The lake supplies irrigation water for the expansive Everglades Agricultural Area, and is a critical supplemental water supply for the Everglades. Seedpods from the flowers of the American Lotus, which are harvested out of Lake Okeechobee, account for 80 percent of this popular addition to floral arrangements throughout the nation.



A scientist monitors the return of native grasses and plants in the lake.

CHANGING THE LAKE

Over the past decade Lake Okeechobee has experienced a number of changes due to excessive nutrient inputs, extreme high and low water levels, and an invasion of exotic and nuisance plants and animals. Each of these stressors can magnify the impacts of the others – endangering the lake's well-being.

During the late 1990s, several years of unrelentingly high water levels severely damaged aquatic plant communities along much of the northern, western and southern lake shore. High water, wind and waves uprooted submerged plants like eelgrass (tape grass, *Vallisneria*) and peppergrass (*Potamogeton*), as well as emergent plants such as bulrush (buggywhips, *Scirpus*) and cattail (*Typha*). Many of these plants provide habitat or shelter for the lake's wildlife. The dead plants were washed up along the western lake shore, forming a thick “berm” of muddy organic material. The water in this region of the lake became cloudy with sediment, or turbid, making it difficult for life-giving sunlight to reach plants that create habitat for fisheries. The lake's sports fishery was heavily impacted during this period of high lake stage.

RECREATING A NATURAL DROP IN LAKE LEVELS

To remedy this situation, in 2000 the South Florida Water Management District carried out a managed spring recession of the

lake (lowering water levels). The goal: to reduce water levels to 13.5 feet for at least eight weeks, to allow the plants to recover and so that sediments suspended in the water would once again settle to the bottom. But nature complicated what seemed to be a simple plan. After close to a decade of higher than average rainfall, an unexpectedly severe drought followed on the heels of this operation. Water levels in the lake actually declined to a historic low, dropping below 10 feet by Summer 2001. The extreme low stage made it nearly impossible for fishermen to go out on the lake and took a heavy toll on the local economy. However, the drought brought considerable benefits from the standpoint of the lake's ecology. Millions of bulrush and spikerush (needle grass, *Eleocharis*) plants sprang from the exposed sediments, and the low water allowed state and federal agencies the chance to remove a large part of the muddy berm.



Bulrush (above) and submerged plants including eelgrass (left) are important native plants that are rapidly re-emerging in Lake Okeechobee.

Then the rains returned. Water levels increased to near 15 feet in Fall 2001. During the height of the 2002 wet season, Lake Okeechobee levels rose to nearly 16 feet before beginning the gentle, gradual decline that is normal for the beginning of the dry season. Under these conditions, the lake's submerged and emergent plants have continued to flourish. Dense stands of spikerush are now growing near King's Bar and along the lake's western shoreline, and large beds of eelgrass, peppergrass, and hydrilla have developed in several regions of the lake. The plants continue to produce flowers, indicating they are in a healthy condition.

Regions of the lake where a berm of muck and soil were removed have a healthier lake bed with re-established healthy communities of native plants including arrowhead (*Sagittaria*), eelgrass and bulrush. Some of these areas also are displaying a return of peppergrass. These revitalized shoreline areas are now being actively fished, and are producing very good results. Good conditions are expected to continue, as long as the lake stage remains within a range considered healthy for the system. That range: between approximately 11 feet at the end of the dry season and 15.5 feet at the end of the wet season – or if water levels do not stray far outside of this range for extended periods of time.

Maintaining healthy water levels in Lake Okeechobee will continue to be a challenge for the various state and federal agencies that work together to manage this resource, but should be considerably favored by a new lake regulation schedule adopted in 2000, and an Adaptive Protocols process now under development.

In stark contrast to the fresh, green shoots of recovering vegetation, dense stands of dead melaleuca trees stand as skeletal sentinels surrounding the edges of Lake Okeechobee's marsh – silently heralding the success of efforts to control and eradicate this invader. Melaleuca and another invasive exotic plant, torpedograss, cover about 20 percent or 20,000 acres of the lake's marsh area. In the past, before anyone realized their potential for damage to natural systems, both were planted intentionally in the vicinity of the lake, and both rapidly colonized its marshes. While herbicide treatments to control the melaleuca population and prescribed burns on the area covered by torpedograss have had success, the spread of both of these plants is enhanced by low lake stages.

Scientists continue to keep a watchful eye on these plant populations. In the meantime, prescribed burns are planned when the lake reaches lower stages of around 14 feet. Dead stands of melaleuca trees along the northern and western shoreline are targeted for controlled burns that will destroy only the dead trees and not the returning native vegetation in the understory. More acres of torpedograss will be burned and then treated with herbicide when new shoots are a few inches in height, a treatment method that has proven to be the most effective against this hardy invader.

PRESERVING THE LAKE'S FUTURE

The problems facing the lake do not have easy solutions, because this water resource has a diverse set of functions, including water supply, flood protection, navigation, and fish and wildlife habitat. In addition, the lake has been severely impacted by stresses other than high water, including high nutrient inputs, loss of many thousand acres of marshes due to construction of the dike, and rapid expansion of exotic plants.

In cooperation with other state and federal agencies, the South Florida Water Management District is accomplishing much to remedy these impacts to this most vital natural resource. The Lake Okeechobee Protection Act, passed by the Florida Legislature in 2000, outlines a number of restoration activities that these agencies have begun and will continue to undertake in future years to protect and restore Lake Okeechobee.

To learn more about Lake Okeechobee restoration and vegetation management efforts, please visit our website at www.sfwmd.gov or phone the Okeechobee Service Center at (800) 250-4200 or (863) 462-5260.



Dead melaleuca trees provide temporary habitat for wildlife including the American bald eagle and other native birds.

